

[SEGMENTED SCAN CHAINS WITH DYNAMIC RECONFIGURATIONS]

Abstract

A method is disclosed of diagnosing defects in scan chains by statically and dynamically segmenting and reconfiguring the scan chains. A plurality of serially extending scan chains are partitioned into a plurality of serially arranged equal length segments such that each serially extending scan chain comprises a plurality of serially extending segments. A plurality of multiplexors are positioned between the plurality of segments of each scan chain, and are controlled and utilized to connect each segment of the scan chain to the next serial segment in the same scan chain, or to connect each segment of the scan chain to the next serial segment in a lateral adjacent scan chain. Scan in data patterns are introduced into the plurality of serially extending scan chains. Particular defective segments of the plurality of serially extending scan chains are identified by controlling the multiplexors to connect and shift the data pattern out of each segment of a scan chain serially to the next serial segment in the same scan chain, or to connect and shift the data pattern out of each segment of

the scan chain to the next serial segment in an adjacent lateral scan chain, with a sequence of serial shifts and serial–lateral shifts being selected to identify particular defective segments of the plurality of serially extending scan chains.